

INTERNATIONAL SEARCH REPORT

International Application No

T/GB 03/04301

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G01V11/00 E21B47/12 H04B14/02 G08C19/24

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01V H04B G08C E21B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal, PAJ, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 513 403 A (TROY GEORGE W) 23 April 1985 (1985-04-23)	1,2, 4-12, 27-29, 31,32, 47-52
Y	abstract; claims 1,12; figures 1,6,7 column 2, line 24 - line 26 column 4, line 46 - line 50 column 9, line 63 - column 10, line 5 column 6, line 46 - line 66 column 6, line 33 - line 35 column 3, line 49 - line 52 column 4, line 3 - line 7 ----- -/--	3,30

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"Z" document member of the same patent family

Date of the actual completion of the international search

26 January 2004

Date of mailing of the international search report

15. 04 2004

Name and mailing address of the ISA

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB 2 281 424 A (BAKER HUGHES INC) 1 March 1995 (1995-03-01)	3,30
A	abstract; figure 17 page 16, line 12 - line 13 page 34, line 9 - page 35, line 21 page 36, line 26 - page 37, line 4 -----	2,29
A	US 5 148 408 A (MATTHEWS H GERARD) 15 September 1992 (1992-09-15) abstract; figures 2,3 column 2, line 46 - column 3, line 13 column 4, line 64 - column 5, line 6 -----	2,3,29, 30
A	US 4 293 936 A (COX WILLIAM H ET AL) 6 October 1981 (1981-10-06) abstract -----	2,3,29, 30
A	US 3 659 085 A (POTTER BASIL E ET AL) 25 April 1972 (1972-04-25) column 18, line 49 - line 51 -----	3,30
A	GB 2 094 527 A (GEARHART IND INC) 15 September 1982 (1982-09-15) page 1, line 79 - page 2, line 50 page 3, line 8 - line 44 -----	2,29
A	WO 93/06578 A (ELDEC CORP) 1 April 1993 (1993-04-01) abstract; claim 7 page 2, line 28 - page 3, line 7 -----	1,27

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International application No.
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Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-12, 12-32, 47-52

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/ GB 03/ 04301

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-12,27-32,47-52

method of conserving battery energy used in transmitting signals carrying data from a downhole location with a coding scheme where the time of transmission represents the data characterised by the use of different frequency characteristics for each of the respective downhole tools to carry their different sets of data.

2. claims: 13-18,33-38

method of conserving battery energy used in transmitting signals carrying data from a downhole location with a coding scheme where the time of transmission represents the data characterised by the use of overlapping frames to better use the pulse-free periods.

3. claims: 19,20,39,40

method of conserving battery energy used in transmitting signals carrying data from a downhole location with a coding scheme where the time of transmission represents the data characterised by adding a signal prior to the actual data to provide information on the possible adaptation of the coding scheme.

4. claims: 21-23,41-43

method of conserving battery energy used in transmitting signals carrying data from a downhole location with a coding scheme where the time of transmission represents the data characterised by using a look-up table to facilitate ease of understanding of coding schemes.

5. claims: 24-26,44-46

method of conserving battery energy used in transmitting signals carrying data from a downhole location with a coding scheme where the time of transmission represents the data characterised by the coding scheme being based on time slots of equal length where a pattern of pulses, associated with a signal, is distributed to minimize the mean number of pulses per associated pattern.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

CT/GB 03/04301

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4513403	A	23-04-1985	NONE	
GB 2281424	A	01-03-1995	US 5592438 A CA 2130282 A1 CA 2363981 A1 FR 2716492 A1 GB 2317955 A ,B GB 2317979 A ,B NO 943059 A NO 20030612 A US 6208586 B1 US 5850369 A	07-01-1997 19-02-1995 19-02-1995 25-08-1995 08-04-1998 08-04-1998 20-02-1995 20-02-1995 27-03-2001 15-12-1998
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WO 9306578	A	01-04-1993	WO 9306578 A1	01-04-1993